

ABSTRACT

A plasma processing method is conducted while a thickness of a resist film being monitored, thereby preventing the thickness of the resist film from being reduced. The plasma processing method includes steps of supplying a processing gas into an airtight processing chamber, and plasma-processing a target layer formed on an object to be processed by using a resist film as a mask. The method includes a main etching process (first process) of plasma-processing the target layer while the thickness of the resist film being monitored until the reduction rate of the thickness of the resist film reaches a predetermined value, and an over-etching process (second process) of plasma-processing the target layer in a changed process condition in which selectivity against the resist film is higher than in the first process.